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RADULA BOLANDERI Gottsche. (*R. spicata* Aust.)

Plants slender, becoming cæspitose. Stems are short, with short, pinnately-arranged branches. The leaves are loosely imbricate, obovate, with obtusely rounded apex. Lower lobes ⅓ the size of the upper, inflated, rhomboid ovate, with apex usually appressed to upper lobe. Antheridial spikes numerous, linear, and directed downward.

The perianth is obconic, bilabiate, with margin of lips entire. *R. Bolanderi* is found in the Coast Range Mountains from San Francisco to Vancouver Island. Dr. M. A. Howe states (Mem. Torr. Bot. Club, **7**:159, 1899,) that there seems to be little or nothing in the description or figure of *R. arctica* Steph. to distinguish it from young plants of *R. Bolanderi.*

The species is figured in Pearson's List Can. Hep. 4. *pl. 4.* 1890, as *R. spicata.*

RADULA OBCONICA Sulliv.

This is a Northern species, occurring rarely from Ohio to New Jersey, on trees in cedar swamps. The stems branch undeterminately; the leaves are distant, round-ovate. The perianth is rather obconic to clavate, with mouth obliquely truncate and entire. The genus Radula occurs more abundantly in the tropics than in temperate regions. Schiffner (Conspectus Hep. Arch. Indici, 1898) reporting twenty species from the islands of Java and Sumatra alone. Much work needs to be done in collecting American forms and determining the range of species.

Sayre, Pa.

THE PERISTOME. IV.

BY A. J. GROUT.

So much space in this issue is taken by the concluding article on nomenclature that only a few additional notes on species previously treated will be given here.

Prof. F. E. Lloyd, of the Teachers' College, New York City, showed the author an unusually pretty experiment with the spore distribution of Polytrichum. He took a fully matured capsule from which the operculum had recently fallen and which was still nearly filled with spores; holding this up to the light with the mouth of the capsule toward him and the lower end of the seta grasped in the left hand, he twanged the seta *a la guitar* so as to give the capsule short, sharp shakes. The epiphragm then appears as a translucent membrane and the mass of spores can be seen rolling up against its lower edge like sawdust in a drum, while they escape in clouds from the openings between the teeth.

With respect to spore distribution in the Buxbaumiaceae, Prof. Lloyd calls attention to the statements of Prof. Goebel that in *Webera sessilis* the flattening of the capsule on the dorsal side is useful, not alone for light absorption but also for spore dispersal. Drops of rain strike this flattened upper surface and by their impact force out a puff of spores from the nozzle-like peristome. The capsules are really minute powder guns all set for action. If a fresh mature deoperculate capsule be given a slight tap with finger or pen a similar result can be obtained. The adaptation of the narrow inverted-funnel-shaped peristome is evident. If the opening were larger the puff of air caused by the pressure on the capsule would not be sufficient to carry out the spores and it would also admit water. Prof. Lloyd thinks that this impeaches my statement that spores depend on wind for distribution. I do not believe that the spores will be normally ejected from the wet capsules, and surely the wind must play a considerable part in the scattering of the dry spores after they are ejected.

I hope some of our readers will try to make observations which will answer the following questions:

Will rain drops cause the ejection of the spores? I have not actually seen this and Prof. Goebel does not state that he has, but the inference is that he speaks from observation. It seems to me that insect footfalls and other causes may be as potent as raindrops. Possibly spores may adhere to the bodies of the animals which cause their discharge, and be still farther distributed in this manner.

Will the spores continue to be ejected after the capsules are wetted?

Will the spores of Buxbaumia be ejected in a similar manner in any of the species? I am particularly anxious to have this third question carefully investigated because European bryologists state that the spores can not escape through the peristome because of their large size. If this be true it seems conclusive proof of the degeneracy of Buxbaumia, for surely the highly developed peristome had a function at some time in the phylogenetic history of the species.

Members of the Sullivant Moss Chapter are specially requested to investigate and report.

SCIENTIFIC NAMES AND THEIR CHANGES. II. (Concluded).*

By A. J. Grout.

Two or more names which may have been applied to the same plant are known as synonyms and whichever is adopted for the plant in question, none of the others should be applied to any new species of that same genus. This in order to avoid confusion.

It sometimes happens that the same specific name is given to two species in the same genus. Thus the moss which Schimper named *Pylaisia velutina* has been found by Cardot to be the moss which Hedwig called *Pterigynandrum intricatum* and which should be called *Pylaisia intricata* (Hedw.) Cardot.

Then the moss which has been passing as *Pylaisia intricata* (Hedw.) Schimp. has to have a new name, and M. Cardot proposes to call it *P. Schimperi* in honor of Schimper. In this case the confusion was caused by Schimper's failure to determine just what Hedwig's *Pterigynandrum* was. In the more common case the man who uses the name the second time is ignorant of its first use.

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*Dr. M. A. Howe calls my attention to the fact that the Berlin rule referred to in Part I. was promulgated by the botanists of the Berlin Museum and not by a "Congress." This rule, however, has been widely adopted.